CLAIMS

What is claimed is:

1. An isolated or recombinant nucleic acid encoding a capsular gene cluster of *Streptococcus suis* or a gene or gene fragment derived thereof.

2. The isolated or recombinant nucleic acid of claim 1, wherein said nucleic acid encodes a *Streptococcus suis* serotype-specific central region.

3. The isolated or recombinant nucleic acid of claim 1 or claim 2, wherein said isolated or recombinant nucleic acid is hybridized to a second nucleic acid encoding a gene derived from a *Streptococcus suis* serotype 1, 2, or 9 capsular gene cluster.

4. An isolated or recombinant nucleic acid encoding a capsular gene cluster of *Streptococcus suis* serotype 2 or a gene or gene fragment derived thereof, wherein said isolated or recombinant nucleic acid comprises SEQ. ID. NO. 9 and said isolated or recombinant nucleic acid encodes a capsular gene cluster of *Streptococcus suis* serotype 2 or a gene or gene fragment derived thereof selected from the group of sequences consisting of SEQ. ID. NO. 10, SEQ. ID. NO. 53, SEQ. ID. NO.11, SEQ. ID. NO.12, SEQ. ID. NO.13, SEQ. ID. NO.14, SEQ. ID. NO.15, SEQ. ID. NO.16, SEQ. ID. NO.17, SEQ. ID. NO.18, SEQ. ID. NO.19, SEQ. ID. NO.20, SEQ. ID. NO.21, SEQ. ID. NO.22, SEQ. ID. NO.23, SEQ. ID. NO.24, SEQ. ID. NO.25, SEQ. ID. NO. 26, SEQ. ID. NO.27 and SEQ. ID. NO. 28.

5. An isolated or recombinant nucleic acid encoding a capsular gene cluster of *Streptococcus suis* serotype 1 or a gene or gene fragment derived thereof, wherein said isolated or recombinant nucleic acid is SEQ. ID. NO.29 and said isolated or recombinant nucleic acid encodes a capsular gene cluster of *Streptococcus suis* serotype 1 or a gene or gene fragment derived thereof selected from the group consisting of SEQ. ID. NO.30, SEQ. ID. NO. 31, SEQ. ID. NO.32, SEQ. ID. NO.33, SEQ. ID. NO.34, SEQ. ID. NO.35 and SEQ. ID. NO.36.

6. An isolated or recombinant nucleic acid encoding a capsular gene cluster of *Streptococcus suis* serotype 9 or a gene or gene fragment derived thereof, wherein said nucleic acid comprises SEQ. ID. NO.37 and wherein said isolated or recombinant nucleic acid encodes a capsular gene cluster of *Streptococcus suis* serotype 9 or a gene or gene fragment derived thereof selected from the group consisting of SEQ. ID. NO.38, SEQ. ID. NO.39, SEQ. ID. NO.40, SEQ. ID. NO.41, and SEQ. ID. NO.42.

7. A nucleic acid probe or primer derived from the isolated or recombinant nucleic acid of any one of claims 1 to 6, wherein said nucleic acid probe or primer allows species or serotype specific detection of *Streptococcus suis*.

8. The nucleic acid probe or primer of claim 7, wherein said nucleic acid probe or primer further comprises at least one reporter molecule.

9. A diagnostic test kit comprising the nucleic acid probe or primer of claim 7 or claim 8.

10. A protein or fragment thereof encoded by the isolated or recombinant nucleic acid of any one of claims 1 to 6.

11. The protein or fragment of claim 10, wherein said protein or fragment is capable of polysaccharide biosynthesis.

12. A process for producing a *Streptococcus suis* capsular antigen, said method comprising:

using the protein or fragment of claim 11 to prepare said *Streptococcus suis* capsular antigen.

13. A *Streptococcus suis* capsular antigen produced by the process of claim 12.

14. A vaccine comprising:

the *Streptococcus suis* capsular antigen of claim 13 in an amount sufficient to produce an immune response in a subject, and

a suitable carrier or adjuvant.

15. A recombinant *Streptococcus suis* mutant having a modified capsular gene cluster.

16. A recombinant microorganism comprising at least a part of a capsular gene cluster of *Streptococcus suis*, wherein said capsular gene cluster comprises a deletion, insertion or (point)-mutation.

17. The recombinant microorganism of claim 16, wherein said recombinant microorganism comprises a lactic acid bacterium.

18. A vaccine comprising the recombinant *Streptococcus suis* mutant of claim 15 or the microorganism of claim 16 or claim 17.

19. The vaccine of claim 18, wherein said vaccine includes a Streptococcus mutant deficient in capsular expression.

20. The vaccine of claim 19, wherein said Streptococcus mutant deficient in capsular expression is a recombinant Streptococcus mutant.

21. The vaccine of claim 19 or claim 20, wherein said Streptococcus mutant deficient in capsular expression is capable of surviving in an immune-competent host.

22. The vaccine of claim 21, wherein said Streptococcus mutant deficient in capsular expression is capable of surviving at least 4-5 days in said immune-competent host.

23. The vaccine of any one of claims 19 to 22, wherein said Streptococcus mutant deficient in capsular expression expresses a *Streptococcus* virulence factor or antigenic determinant.

24. The vaccine of any of claims 19 to 23, wherein said Streptococcus mutant deficient in capsular expression expresses a *non-Streptococcus* protein.

25. The vaccine of claim 24 wherein said non- *Streptococcus* protein has been derived from a pathogen.

26. A method for controlling or eradicating a Streptococcal disease in a population, said method comprising:

vaccinating subjects in said population with the vaccine of any one of claims 18 to 25.

27. A method for controlling or eradicating a Streptococcal disease, said method comprising:

testing for the presence of encapsulated Streptococcal strains in a sample collected from at least one subject in a population partly or wholly vaccinated with a vaccine of any one of claims 18 to 25.

28. A method for controlling or eradicating a Streptococcal disease comprising testing for the presence of capsule-specific antibodies directed against Streptococcal strains in a sample collected from at least one subject in a population partly or wholly vaccinated with a vaccine of any one of claims 18 to 25.

29. A method for controlling or eradicating a Streptococcal disease in a population comprising:

selecting subjects in said population vaccinated with a vaccine according to any one of claims 18 to 25; and

testing a sample collected from at least one subject in said population for the presence of encapsulated Streptococcal strains and/or for the presence of capsule-specific antibodies directed against Streptococcal strains.